

BACHELOR OF SCIENCE IN DATA SCIENCE

Required Courses

Code	Title	Credit Hours
Data Science Requirements (24-25)		
DS 100	Intro to Profession	3
DS 151	Intro to Data Science	3
Select one of the two options:		6-7
DS 251 & DS 351	Math Foundations for DS and Math Foundation for DS II	6
MATH 252 & MATH 350	Introduction to Diff Equations and Intro to Computational Mathe	7
DS 261	Ethics and Privacy in DS	3
DS 451 or CSP 571	Data Science Life Cycle Data Preparation and Analysis	3
MATH 474 or MATH 476	Probability and Statistics Statistics	3
MATH 484 or CS 484	Regression Intro to Machine Learning	3
Applied Mathematics Requirements (17)		
MATH 151	Calculus I	5
MATH 152	Calculus II	5
MATH 251	Multivariate & Vector Calculus	4
MATH 332	Elementary Linear Algebra	3
Computer Science Requirements (10-12)		
Select one of the following sequences:		4-6
CS 115 & CS 116	Object-Oriented Programming I and Object-Oriented Programming II	4
CS 104 & CS 201	Intro to Comp Prgm for Engrs and Accelerated Intro to Cmptr Sci	6
CS 331	Data Structures and Algorithms	3
CS 425	Database Organization	3
Communication (3)		
Select one of the following:		3
COM 421	Technical Communication	3
COM 428	Verbal Visual Communications	3
INTM 301	Communications for Workplace	3
ITM 300	Commctn in the Wrkpl	3
SCI 522	Public Engagement Scientists	3
Ethics and Society (3)		
Select one of the following:		3
HIST 385	Women in Computing History	3
ITMM 485	Legal and Ethical Issues in IT	3
PHIL 374	Ethics in Computer Science	3
PHIL 375	Computer Ethics	3
PHIL 381	AI Ethics	3
SOC 362	Technology Social Change	3
Data Science Technical Depth (12)		
Select four of the following:		12
CS 422	Data Mining	3
CS 429	Information Retrieval	3

CS 430	Introduction to Algorithms	3
CS 451	Parallel/Distributed Computing	3
CS 481	Intllgnc Txt Analys Knwldg Mgm	3
CS 522	Advanced Data Mining	3
CS 577	Deep Learning	3
CS 584	Machine Learning	3
CSP 554	Big Data Technologies	3
MATH 435	Linear Optimization	3
MATH 446	Introduction to Time Series	3
MATH 475	Probability	3
MATH 476	Statistics	3
MATH 535	Optimization I	3
MATH 546	Introduction to Time Series	3
MATH 563	Mathematical Statistics	3
MATH 564	Applied Statistics	3
MATH 569	Statistical Learning	3
MATH 574	Bayesian Computational Stats	3
Data Science Electives (12)		
Select 12 credit hours from the following courses, or any other courses in Data Science Technical Depth:		12
COM 383	Social Networks	3
CS 458 or ECE 443	Intro to Information Security Intro Computer Cyber Security	3
CS 480	Introduction to Artificial Int	3
CS 487	Software Engineering	3
CS 512	Computer Vision	3
CS 520	Data Integration Warehousing	3
CS 546	Parallel and Distributed Proc	3
CS 553	Cloud Computing	3
CS 554	Data-Intensive Computing	3
CS 578	Interact/Trans Mach Learning	3
CS 579	Online Social Network Analysis	3
CS 583	Probabilistic Graphical Models	3
CS 585	Natural Language Processing	3
DS 472	Data Science Practicum	3-6
ECE 308	Signals Systems	3
ECE 442	Internet of Things/Cyber Phys	3
ECE 447	AI and Edge Computing	3
ECE 449	Obj-Oriented Prog & Machine Le	3
ECE 481	Image Processing	3
ECE 501	AI and Edge Computing	3
ECE 510	IoT and Cyber Physical Systems	3
ECE 511	Analysis Random Signals	3
ECE 520	Info Theory and Applications	3
ECE 521	Quantum Electronics	3
ECE 563	AI in Smart Grid	3
ECE 565	Compt Vision Image Processing	3
ECE 566	Machine and Deep Learning	3
ECE 567	Statistical Signal Processing	3
EMGT 363	Creativity/Inventions/Entrepre	3

ITMS 418	Coding Security	3
ITMS 448	Cyber Security Technologies	3
ITMS 478	Cyber Security Management	3
MATH 225	Introductory Statistics	3
MATH 380	Intro to Mathematical Modeling	3
MATH 483	Design and Analysis of Exprmnt	3
MATH 497	Special Problems	1-20
MATH 527	Machine Learning in Finance:	3
MATH 565	Monte Carlo Methods in Fin	3
SSCI 325	Intermediate Geo Info Systems	3
SSCI 480	Intro to Survey Methodology	3
Science Requirement and Electives		(10)
See Illinois Tech Core Curriculum, Section D		10
Humanities and Social Science Requirements		(21)
See Illinois Tech Core Curriculum, Sections B and C		21
Interprofessional Projects (IPRO)		(6)
See Illinois Tech Core Curriculum, Section E		6
Free Electives		(9)
Select nine credit hours		9
Total Credit Hours		127-130

HUMANITIES ELECTIVE (300+)		3	DS ELECTIVE	3
		15		15
			Year 4	
Semester 1	Credit Hours	Semester 2	Credit Hours	
DS 451	3	DS 472	3-6	
FREE ELECTIVE	3	FREE ELECTIVE	3	
DS TECH DEPTH	3	DS TECH DEPTH	3	
IPRO	3	IPRO	3	
SOCIAL SCIENCE ELECTIVE (300+)		HUMANITIES ELECTIVE (300+)		3
DS ELECTIVE		3		
		18		15-18

Total Credit Hours: 127-130

Bachelor of Science Data Science Curriculum

		Year 1	
Semester 1	Credit Hours	Semester 2	Credit Hours
DS 100	3	ETHICS AND SOCIETY	3
DS 151	3	MATH 152	5
MATH 151	5	CS 116	2
CS 115	2	SCIENCE ELECTIVE	4
HUMANITIES 200-LEVEL COURSE	3	SOCIAL SCIENCE ELECTIVE	3
		16	17

		Year 2	
Semester 1	Credit Hours	Semester 2	Credit Hours
MATH 251	4	MATH 474	3
MATH 332	3	DS 261	3
CS 331	3	CS 425	3
SCIENCE ELECTIVE	3	SOCIAL SCIENCE ELECTIVE	3 (+)
HUMANITIES OR SOCIAL SCIENCE ELECTIVE	3	SCIENCE ELECTIVE	3
		16	15

		Year 3	
Semester 1	Credit Hours	Semester 2	Credit Hours
DS 251	3	DS 351	3
CS 484	3	COMMUNICATION	3
DS ELECTIVE	3	DS TECH DEPTH	3
FREE ELECTIVE	3	DS TECH DEPTH	3